sites of these regions are indicated with arrows. The translation of the three ORFs present in genome DI-C is indicated: chimeric ORF of 6.7 kb resulting from the fusion of discontinuous regions I and II in phase; the mini-ORF of three amino acids preceding it in phase; and the ORF, which initiates at the AUG of gene S. Highly homologous regions -- with the proteic domains described for other coronaviruses as those responsible for the polymerase and helicase activities, and metal ion binding sites -- appear shaded. CTAAAC transcription promoter sequences appear shaded. The overlapping area between ORFs 1a and 1b (41 nucleotides) appears shaded, the slippery sequence of the ribosome is underlined, and the ORF1a termination codon is in a box. In positions 637, 6397, and 6485, the specific changes with respect to the parental genome are indicated. The nucleotides present in the parental genome in these positions are indicated.

IN THE CLAIMS:

Please cancel claims 57-59.

Please add the following new claims:

65. (NEW) A porcine vaccine against a pathogen of interest, wherein the vaccine comprises a helper virus, at least one recombinant virion, and a pharmaceutical excipient, wherein the recombinant virion(s) comprises:

(A) at least 1.9 kb of the 5' end of a TGEV genome;

(B) the pseudoknot region, including the region of overlap between ORFs 1a and 1b, of the TGEV genome;

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(C) defective or missing S, M, and N structural genes of the TGEV genome;

(D) at least bp 9691-9707 of the 3' end of the TGEV genome; and

(E) at least one heterologous gene sequence encoding an antigen of the pathogen of interest inserted under the control of the S gene promoter of the TGEV genome.

66. (NEW) The vaccine as claimed in claim 65, wherein the pathogen has a tropism for enteric or respiratory mucosae.

67. (NEW) The vaccine as claimed in claim 65, wherein the vaccine comprises more than one recombinant virion.

68. (NEW) The vaccine as claimed in claim 65, wherein the virion comprises more than one heterologous gene sequence encoding an antigen of an infectious agent that infects porcine species.

69. (NEW) A porcine vaccine against *Mycoplasma hyopneumoniae*, wherein the vaccine comprises a helper virus, at least one recombinant virion, and a pharmaceutical excipient, wherein the recombinant virion(s) comprises:

(A) at least 1.9 kb of the 5' end of a TGEV genome;

(B) the pseudoknot region, including the region of overlap between ORFs 1a and 1b, of the TGEV genome;

(C) defective or missing S, M, and N structural genes of the TGEV genome;

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(D) at least bp 9691-9707 of the 3' end of the TGEV genome; and

(E) at least one heterologous gene sequence encoding an antigen of *Mycoplasma hyopneumoniae*, inserted under the control of the S gene promoter of the TGEV genome.

6 70. (NEW) A porcine vaccine against a pathogen of interest, wherein the vaccine comprises a helper virus, at least one recombinant virion, and a pharmaceutical excipient, wherein the recombinant virion(s) comprises:

(A) at least 1.9 kb of the 5' end of a TGEV genome;

(B) the pseudoknot region, including the region of overlap between ORFs 1a and 1b, of the TGEV genome;

B2

(C) defective or missing S, M, and N structural genes of the TGEV genome;

(D) at least bp 9691-9707 of the 3' end of the TGEV genome; and

(E) at least one heterologous gene sequence encoding an antigen of *Mycoplasma hyopneumoniae*, *Actinobacillus pleuropneumoniae, Actinobacillus suis, Haemophilus parasuis,* Porcine parvovirus, Leptospira, *Eschericia coli, Erysipelothrix rhusiopathiae, Pasteurella multocida, Bordetella bronchiseptica, Clostridium sp., Serpulina hyodisenteriae,* porcine epidemic diarrhea virus (PEDV), porcine respiratory coronavirus, rotavirus, the pathogens that cause porcine reproductive and respiratory syndrome (PRRSV), Aujeszky's disease (pseudorabies virus), swine influenza, transmissible gastroenteritis, and the

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etiologic agent of atrophic rhinitis and proliferative ileitis, inserted under the control of the S gene promoter of the TGEV genome.

7 71. (NEW) The porcine vaccine as claimed in claim 70, wherein the heterologous gene in (E) encodes an antigen of PEDV.

8 72. (NEW) The porcine vaccine as claimed in claim 70, wherein the heterologous gene in (E) encodes an antigen of PRRSV.

9 73. (NEW) A porcine vaccine against a pathogen of interest, wherein the vaccine comprises at least one recombinant virion and a pharmaceutical excipient, wherein the recombinant virion(s) is prepared according to the method comprising:

(A) constructing a recombinant plasmid comprising a defective TGEV genome under the control of an RNA polymerase promoter, wherein the defective TGEV genome comprises:

(1) at least 1.9 kb of the 5' end of the TGEV genome;

(2) the pseudoknot region, including the region of overlap between ORFs 1a and 1b, of the TGEV genome;

(3) incomplete S, M, and N structural genes of the TGEV genome;

(4) at least bp 9691-9707 of the 3' end of the TGEV genome); and

(5) at least one heterologous gene sequence encoding an antigen of the pathogen of interest inserted under the control of the S gene promoter of the TGEV genome;

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(B) producing RNA of the sequences in (A) by transcribing the sequences from the RNA polymerase promoter;

(C) infecting cells with a helper virus;

(D) introducing the RNA produced in step (B) into the infected cells of step (C);

(E) producing a recombinant virion comprising a defective TGEV genome and heterologous gene under the control of the S gene promoter of the TGEV genome.

10 74. (NEW) The vaccine as claimed in claim 71, wherein the pathogen has a tropism for enteric or respiratory mucosae.

11 75. (NEW) The vaccine as claimed in claim 71, wherein the vaccine comprises more than one recombinant virion.

12 76. (NEW) The vaccine as claimed in claim 71, wherein the virion comprises more than one heterologous gene sequence encoding an antigen of an infectious agent that infects porcine species.

13 77. (NEW) A porcine vaccine against *Mycoplasma hyopneumoniae*, wherein the vaccine comprises at least one recombinant virion and a pharmaceutical excipient, wherein the recombinant virion(s) is prepared according to the method comprising:

(A) constructing a recombinant plasmid comprising a defective TGEV genome under the control of an RNA polymerase promoter, wherein the defective TGEV genome comprises:

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(1) at least 1.9 kb of the 5' end of the TGEV genome;

(2) the pseudoknot region, including the region of overlap between ORFs 1a and 1b, of the TGEV genome;

(3) incomplete S, M, and N structural genes of the TGEV genome;

(4) at least bp 9691-9707 of the 3' end of the TGEV genome); and

(5) at least one heterologous gene sequence encoding an antigen of *Mycoplasma hyopneumoniae*, inserted under the control of the S gene promoter of the TGEV genome;

B2

(B) producing RNA of the sequences in (A) by transcribing the sequences from the RNA polymerase promoter;

(C) infecting cells with a helper virus;

(D) introducing the RNA produced in step (B) into the infected cells of step (C);

(E) producing a recombinant virion comprising a defective TGEV genome and heterologous gene under the control of the S gene promoter of the TGEV genome.

14 78. (NEW) A porcine vaccine against a pathogen of interest, wherein the vaccine comprises at least one recombinant virion and a pharmaceutical excipient, wherein the recombinant virion(s) is prepared according to the method comprising:

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(A) constructing a recombinant plasmid comprising a defective TGEV genome under the control of an RNA polymerase promoter, wherein the defective TGEV genome comprises:

(1) at least 1.9 kb of the 5' end of the TGEV genome;

(2) the pseudoknot region, including the region of overlap between ORFs 1a and 1b, of the TGEV genome;

(3) incomplete S, M, and N structural genes of the TGEV genome;

(4) at least bp 9691-9707 of the 3' end of the TGEV genome); and

(5) at least one heterologous gene sequence encoding an antigen of *Mycoplasma hyopneumoniae*, *Actinobacillus pleuropneumoniae*, *Actinobacillus suis*, *Haemophilus parasuis*, Porcine parvovirus, Leptospira, *Eschericia coli*, *Erysipelothrix rhusiopathiae*, *Pasteurella multocida*, *Bordetella bronchiseptica*, *Clostridium sp.*, *Serpulina hyodisenteriae*, porcine epidemic diarrhea virus (PEDV), porcine respiratory coronavirus, rotavirus, the pathogens that cause porcine reproductive and respiratory syndrome (PRRSV), Aujeszky's disease (pseudorabies virus), swine influenza, transmissible gastroenteritis, and the etiologic agent of atrophic rhinitis and proliferative ileitis, inserted under the control of the S gene promoter of the TGEV genome;

(B) producing RNA of the sequences in (A) by transcribing the sequences from the RNA polymerase promoter;

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(C) infecting cells with a helper virus;

(D) introducing the RNA produced in step (B) into the infected cells of step (C);

(E) producing a recombinant virion comprising a defective TGEV genome and heterologous gene under the control of the S gene promoter of the TGEV genome.

15 79. (NEW) The porcine vaccine as claimed in claim 78, wherein the heterologous gene in (5) encodes an antigen of PEDV.

16 80. (NEW) The porcine vaccine as claimed in claim 78, wherein the heterologous gene in (5) encodes an antigen of PRRSV.

REMARKS

Reconsideration of this application is respectfully requested.

Claims 57-59 have been cancelled and claims 65-80 have been added to the application. Claims 65-68 and 73-76 read on the elected subject matter of a porcine vaccine and are subject to examination. Claims 69 and 77 read on the elected species of *Mycoplasma hyopneumoniae* and are also subject to examination.

Support for new claims 66 and 74 can be found on page 6, line 48 continuing to page 8, line 1. Support for new claims 67, 68, 75, and 76 can be found on page 11, lines 10-14 of the specification. Support for new claims 69-72 and 77-80 can be found on page 10, lines 11-20. Support for the elements of the other new claims will be discussed below. No new matter was added in these new claims.

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51

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